

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Yoshinobu SAITO et al. Art Unit: 1796  
Serial No.: 10/541,361 Examiner: DELCOTTO, GREGORY R  
Filed: 07/06/2005 Confirmation No.: 3251  
For: NOVEL SURFACTANT AND Attorney Docket No.: 37808-0011  
USE THEREOF

**Pre-appeal Brief Request for Review**

Dear Sir:

Applicants respectfully submit this pre-appeal brief under the Pre-appeal Brief Request program. This pre-appeal brief is filed on May 17, 2010 (the May 16 deadline fell on a weekend) with a request for a one month extension of time. A one month extension of time payment is made by credit card upon filing of this response. A notice of appeal (two months extension of time) with payment of the appropriate fee also is filed herewith.

Please charge any shortage in fees related to the filing of this document to Deposit Account No. 50-4257. Please credit any excess fees paid to this account.

Respectfully submitted,

  
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## Pre-appeal Brief

### The Issue

Pre-appeal requests are not allowed to cover arguments over claim interpretation. Accordingly, applicant does not argue a debatable point of claim construction. Applicant instead argues that the most important elements of applicants' claims are completely ignored by the Examiner.

### The Claimed Invention

Applicant has discovered that an unbalanced ion pairing for soluble soap unexpectedly gives better lathering. As is well appreciated by a skilled chemist, the counter ion of an amphiphilic such as soap fatty acid dominates the soap molecule solubility. For example, in hard water (containing cationic minerals such as  $\text{Fe}^{+++}$ ,  $\text{Ca}^{++}$  that complex with the anionic moiety), most soaps are poorly insoluble and collect as undesirable precipitates on the lining of a bathtub. In other words, replacing a divalent or trivalent cation with a monovalent cation such as sodium, makes the soap much more soluble (eliminates "bathtub ring") and improves lathering.

Applicant has discovered that replacing some of the cation counterions with a cationic amino acid provides better lathering. The pending claims (see independent claims below) recite an "unbalanced ion pair surfactant" wherein, instead of a mineral cation such as sodium or iron, the counter ion (cation) is an amino acid. The claims further specify ratios of the unusual counterions. For example, "1.3 to 2.3 equivalents of the second amino acid relative to 2 equivalents of the first acylamino acid...." (claim 33, similar recitation to the EPO allowed claims).

The claims recite the unusual condition of a surfactant that has an acyl amino acid as the anionic side with "carboxyl anions" and "amino group cations of the amino acid" as the cationic side (see claim 25 below) at these ratios. A schematic of this surfactant as counterion solution, was placed into the file on 4/7/2008 and is presented on the next page. The claims were amended to make them as similar as possible to the claims allowed by the EPO.

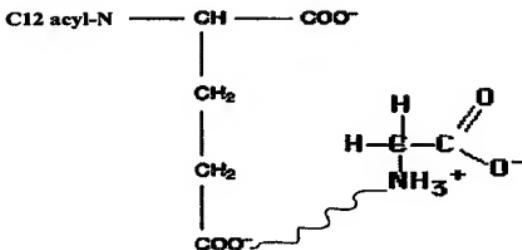
The claims more specifically recite ratios of amino acid cation to anion of 1.4 to 1 or 1.6, etc.. Applicant discovered the need for these ratios, yet until now, the PTO has ignored this critical claim element during prosecution. Both the use of an amino acid cation as counterion, and the ratio are critical to the claimed invention but have been ignored. This is not a fine line distinction of claim interpretation. These entire claim elements have been ignored during prosecution. In this regard, applicant notes the Examiner's more relevant argument that the "compositions specifically taught by" the cited art 'will mix when used and

inherently form the same surfactant as recited." However, the cited art lacks the cationic aminoacid counterion as claimed and certainly lacks the ratios recited in the claims.

The following drawing depicts ion pairing between N-C12 acyl amino acid and glycine (as claimed) in water solution. THESE ION PAIRS EXIST IN AQUEOUS SOLUTION, as a skilled artisan readily understands. Every solvated charge is accompanied by a nearby counterion of some type, even if just a H<sup>+</sup> or OH<sup>-</sup>.

Unexpected results, using a representative example, were placed into the file on 1/26/2009 and also are re-presented below.

**Diagram of ion pairing between N-C<sub>12</sub> acylamino acid and glycine  
IN WATER SOLUTION**



**Counter ion pairing IN SOLUTION  
because insufficient Na<sup>+</sup>, K<sup>+</sup> to balance  
out the COO<sup>-</sup>**

The Cited Art Lacks These Claim Elements

Although believed not required in view of lack of claim elements in the cited art, unexpected results were made of record. The following table was entered under Rule 132 and shows unexpected results when varying the ratio of a representative trimethylglycine to acyl amino acid from 0 to 2 and covers the critical conditions recited in the claims. No reference describes, explicitly or inherently, these conditions. At just 1:1 ratio, and at slight excess, (1.2 to 1.6) unusually good results were obtained as seen in this table.

TABLE: Surfactants containing sodium salt of trimethylglycine in various amounts

Neutralization equivalent	Lathering ability	Refreshed feel	Feel in use		Stability
			after 5 mins.	after 12 hrs.	
0	bad	bad	bad	bad	bad
0.2	bad	bad	bad	bad	bad
0.4	bad	bad	bad	bad	bad
0.6	bad	bad	bad	bad	bad
0.8	fair	fair	fair	fair	bad
1.0	good	good	good	good	good
1.2	very good	good	good	good	good
1.4	very good	good	good	good	good
1.6	very good	good	very good	good	good
1.8	good	good	good	good	good
2.0	fair	good	fair	fair	fair

Until applicant's success, no one has described or even suggested the use of cationic amino acid INSTEAD of a mineral cation counterion for improved laterability of soaps, as claimed. See independent claims below. These unbalanced counterion conditions exist IN SOLUTION but no cited art explicitly describes such or inherently must have such.

INDEPENDENT CLAIMS

33. (Currently Amended) An unbalanced ion pair surfactant comprising a first dicarboxylic N-C<sub>8-24</sub> acylamino acid and a second amino acid in a ratio of between 1.3 to 2.3 equivalents of the second amino acid relative to 2 equivalents of the first acylamino acid, having less than equal molar amounts of alkali counterion, with ion pairs between carboxyl anions of the acylamino acid and amino group cations of the amino acid.

41. (New) A surfactant characterised in comprising a blend of an acidic or neutral N-C<sub>8-24</sub> acylamino acid and a base, wherein

said base has an ion pair formed by an anion deriving from a carboxyl group of an amino acid and a cation deriving from one of alkali metals, alkaline earth metals, organic amines, basic amino acids, N-methyltaurine sodium, N-methyltaurine potassium, taurine sodium, and taurine potassium, and

said acidic or neutral N-C<sub>8-24</sub> acylamino acid and said base are in neutralised form as ion pairs having a pH of 5 to 9, where

the amount of said base is 1.0 to 1.6 equivalents relative to 1 equivalent of N-C<sub>8-24</sub> acylamino acid and, in the case where the N-C<sub>8-24</sub> acylamino acid has two carboxyl groups, is 1.3 to 2.3 equivalents relative to 2 equivalents of N-C<sub>8-24</sub> acylamino acid.

#### REFUSAL TO CONSIDER THE CRITICAL CLAIM LIMITATIONS

Claim 25: The most important limitation is "ion pairs between the carboxyl anions and ....." The Examiner has not provided a description of this element in any cited art, and has not provided a case of inherency (a description wherein, although not explicit) the art MUST have this element. The office action of 11/16/09 dismisses this element out of hand (page 4, 3<sup>rd</sup> paragraph on regarding '836, '281, '380, '378). The statement of inherency (page 5 first full paragraph) is totally unsupported. (also page 6 Nagashima) The ratios claimed are crucial but NO explanation of their presence in the cited art is provided.

Claim 33: The "an unbalanced ion pair" limitation was added (the claim body states "ratio of between 1.3 to 2.3 equivalents...relative to 2 equivalents of the first acylamino acid") but the Examiner never discussed this most important element. The PTO is required to show where the element is literally described or otherwise inherently (MUST be present) in cited art, but has not done so. The office action of 11/16/09 (and previous office actions) dismissed all ratio elements out of hand without any showing of literal or inherent presence in the cited art.

Sincerely,



May 17, 2010

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